This work is focused on the mechanical properties of ultrafine-grained magnesium alloy AZ31 prepared by EX-ECAP method. The main goal of the bachelor thesis is to find external conditions of superplastic deformation: deformation temperature (measured in the range 150 °C - 350 °C) and strain rate (measured in the range 10^{-5} s^{-1} - 10^{-2} s^{-1}). Properties related to the mechanisms of superplasticity (strain rate sensitivity parameter, maximum stress and maximum elongation) were evaluated. Deformation mechanisms were furthermore observed using atomic force microscopy.